

# Zi LI

IEEE STUDENT MEMBER | PHD CANDIDATE, THE UNIVERSITY OF HONG KONG

The University of Hong Kong

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## Biography & Research Interests

I am a PhD candidate at The University of Hong Kong and was an algorithm engineer in the Medical AI Lab at Alibaba DAMO Academy before. I received the B.E. and M.S.E. degrees from Dalian University of Technology, China. My research focuses on medical artificial intelligence, including medical image registration and segmentation, vision-language pre-training, clinical AI systems, and large-scale ECG-report representation learning for cardiac disease classification.

## Education

2025-Now	<b>PhD Candidate</b> , The University of Hong Kong; Postgraduate Scholarship	Hong Kong, China
2019-2022	<b>Master in Software Engineering</b> , Dalian University of Technology (985/211); thesis on deep bilevel optimization learning for medical image registration	Dalian, China
2015-2019	<b>Bachelor in Software Engineering</b> , Dalian University of Technology (985/211); Japanese Intensive; recommended postgraduate admission without entrance examination	Dalian, China

## Experience

2022-2025	<b>Algorithm Engineer, Medical AI Lab</b> , Alibaba DAMO Academy	Hangzhou, China
2021-2021	<b>Summer Research Intern</b> , Tencent AI Lab	Shenzhen, China

At Alibaba DAMO Academy, I worked on medical image registration across fields of view, respiratory states, and modalities, contributing to *SAM-Convex* (MICCAI 2023), *MASR* (CVPR 2024), and *UniReg* (IEEE TCSVT); led CBCT-CT synthesis/registration for the MICCAI Learn2Reg 2023 challenge; and led nasopharyngeal-cancer GTV segmentation and cardiac CMR projects. At Tencent AI Lab, I built a pathology image registration baseline.

## Honors & Awards

### INTERNATIONAL

2025	<b>Postgraduate Scholarship</b> , University of Hong Kong	Hong Kong, China
2024	<b>Highlight paper</b> , CVPR 2024	Seattle, U.S.A
2023	<b>Rank 1st place</b> , Learn2Reg: 2023 MICCAI Registration Challenge	Vancouver, CA
2021	<b>Student Travel Award</b> , MICCAI 2021	Strasbourg, France
2020	<b>Coursera Certificate</b> , Image and Video Processing of Duke University	Virtual
2018	<b>Coursera Certificate</b> , DeepLearning.AI	Virtual
2017	<b>Coursera Certificate</b> , Machine Learning of Stanford University	Virtual

### DOMESTIC

2022	<b>Excellent Master Dissertation Award</b> , Liaoning Province	China
2022	<b>Outstanding Graduate</b> , Liaoning Province	China
2021	<b>National Scholarship (top 0.2%)</b> , Ministry of Education of China	China
2021	<b>Academic Star (top 10/20000+)</b> , Dalian University of Technology	Dalian, China
2019	<b>Merit Student</b> , Dalian University of Technology	Dalian, China
2019	<b>First Class Honors</b> , Dalian University of Technology	Dalian, China

## Recent News, Projects & Service

2026-2029	<b>Participant</b> , NSFC General Program No. 82573722: multimodal registration and hierarchical segmentation for esophageal-cancer staging	China
2025	<b>Teaching Assistant</b> , BMED3700 Artificial Intelligence in Biomedical Engineering, HKU	Hong Kong, China
2024	<b>Creator</b> , Awesome Medical Image Registration repository	Virtual
2024	<b>Co-organizer</b> , OncoReg: Medical Image Registration for Oncological Challenges	Virtual
2023	<b>Ranked 1st place</b> , MICCAI Learn2Reg 2023 Medical Image Registration Challenge	Vancouver, CA

**Reviewer:** T-PAMI, TNNLS, TMI, JBHI, TBME, Neurocomputing; CVPR, ICCV, ECCV, MICCAI, AAI, MIDL, and WACV. **Member:** MICCAI SIG-BIR.

# Selected Publications

\* Equal contribution; # project lead/corresponding author.

## MEDICAL IMAGE REGISTRATION & SEGMENTATION

1. **Zi Li**, Jianpeng Zhang, Tai Ma, Tony C. W. Mok, Yan-Jie Zhou, Zeli Chen, Xianghua Ye, Le Lu, Cheng Chen, Dakai Jin.  
“UniReg: A Universal Model for Controllable CT Image Registration.”  
*IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, Minor Revision, 2026. **[IF=11.1]**
2. H. Kang, T. Ma, H. Zhang, Tony C. W. Mok, **Zi Li**, M. Xu, L. He, Y. Wen.  
“FSE-Reg: Enhancing 3D Deformable Registration with Frozen Large-Scale Pre-trained Segmentation Encoders.”  
*Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2026.
3. **Zi Li**#, Ying Chen, Zeli Chen, Yanzhou Su, Tai Ma, Tony C. W. Mok, Yan-Jie Zhou, Yunhao Bai, Zhilin Zheng, Le Lu, Yirui Wang, Jia Ge, Senxiang Yan, Xianghua Ye, Dakai Jin.  
“Leveraging Semantic Asymmetry for Accurate Gross Tumor Volume Segmentation of Nasopharyngeal Carcinoma in Planning CT.”  
*Medical Image Computing and Computer Assisted Intervention (MICCAI)*, pages 292–302, 2025.
4. Tony C. W. Mok\*, **Zi Li**\*, Yunhao Bai, Jianpeng Zhang, Wei Liu, Yan-Jie Zhou, Ke Yan, Dakai Jin, Yu Shi, Xiaoli Yin, Le Lu, Ling Zhang.  
“Modality-Agnostic Structural Image Representation Learning for Deformable Multi-Modality Medical Image Registration.”  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 11215–11225, 2024. **[Highlight, acc. rate of 2.8%]**
5. **Zi Li**#, Lin Tian, Tony C. W. Mok, Xiaoyu Bai, Puyang Wang, Jia Ge, Jingren Zhou, Le Lu, Xianghua Ye, Ke Yan, Dakai Jin.  
“SAMConvex: Fast Discrete Optimization for CT Registration Using Self-supervised Anatomical Embedding and Correlation Pyramid.”  
*Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2023.
6. Lin Tian\*, **Zi Li**\*, Fengze Liu, Xiaoyu Bai, Jia Ge, Le Lu, Marc Niethammer, Xianghua Ye, Ke Yan, Dakai Jin.  
“SAME++: A Self-supervised Anatomical eMbeddings Enhanced Medical Image Registration Framework Using Stable Sampling and Regularized Transformation.”  
*arXiv:2311.14986*, 2023.
7. Tony C. W. Mok, **Zi Li**, Yingda Xia, Jiawen Yao, Ling Zhang, Jingren Zhou, Le Lu.  
“Deformable Medical Image Registration Under Distribution Shifts with Neural Instance Optimization.”  
*International Workshop on Machine Learning in Medical Imaging (MLMI)*, pages 126–136, 2023. **[Oral]**
8. Xin Fan\*, **Zi Li**\*, Ziyang Li, Xiaolin Wang, Risheng Liu, Zhongxuan Luo, Hao Huang.  
“Automated Learning for Deformable Medical Image Registration by Jointly Optimizing Network Architectures and Objective Functions.”  
*IEEE Transactions on Image Processing*, 32:4880–4892, 2023. **[IF=10.8]**
9. Ziyang Li, **Zi Li**, Risheng Liu, Zhongxuan Luo, Xin Fan.  
“Coupling Deep Deformable Registration with Contextual Refinement for Semi-Supervised Medical Image Segmentation.”  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, pages 1–5, 2022.
10. Risheng Liu, **Zi Li**, Xin Fan, Chenying Zhao, Hao Huang, Zhongxuan Luo.  
“Learning Deformable Image Registration from Optimization: Perspective, Modules, Bilevel Training and Beyond.”  
*IEEE Transactions on Pattern Analysis and Machine Intelligence*, 44(11):7688–7704, 2022. **[IF=24.3]**
11. Risheng Liu, **Zi Li**, Yuxi Zhang, Xin Fan, Zhongxuan Luo.  
“Bi-level Probabilistic Feature Learning for Deformable Image Registration.”  
*Proceedings of the Twenty-Ninth International Joint Conference on Artificial Intelligence (IJCAI)*, pages 723–730, 2020.

## VISION-LANGUAGE, MEDICAL ALIGNMENT

12. **Zi Li**, Jian Chen, Luyao Tang, Weiren Zhao, Edith C. H. Ngai, Cheng Chen.  
“Physiology- and Prototype-Guided Dual-level ECG-Report Alignment for Representation Learning in Internet of Medical Things.”  
Submitted to IEEE Internet of Things Journal. 2026. **[IF=9.6]**
13. L. Tang, Z. Cai, Q. Tian, **Zi Li**, Q. Liu, K. T. Bae, C. Chen.  
“REFLEX-Med: Reinforcement with Label-Free Explainability for Unified Medical Reasoning.”  
*IEEE 15th Image, Video, and Multidimensional Signal Processing Workshop (IVMSP)*, 2026. **[Best Paper Award]**
14. Weiwei Cao, Jianpeng Zhang, Yingda Xia, Tony C. W. Mok, **Zi Li**, Xianghua Ye, Le Lu, Jian Zheng, Yuxing Tang, Ling Zhang.  
“Bootstrapping Chest CT Image Understanding by Distilling Knowledge from X-ray Expert Models.”  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 11238–11247, 2024.

## PATENTS

15. **Zi Li**, Lin Tian, Tony C. W. Mok, Xiaoyu Bai, Puyang Wang, Le Lu, Ke Yan, Dakai Jin.  
“Image registration method, electronic device, and computer-readable storage medium.”  
CN Patent ZL 2023 1 0767446.6, 2024.
16. **Zi Li**, Lin Tian, Xiaoyu Bai, Le Lu, Ke Yan, Dakai Jin.  
“Image processing method, service providing method, apparatus, device, and storage medium.”  
CN Patent ZL 2023 1 1121899.8, 2024.

## CLINICAL AI APPLICATIONS

17. Na Shen\*, Yirui Wang\*, Cheng Yan, Jian Wang, Dandan Zheng, Xuewei Wang, Dazhou Guo, Haoshen Li, Qinji Yu, **Zi Li**, Yuzhen Chen, Ke Yan, Le Lu, Xianghua Ye, Mengsu Zeng, Xinsheng Huang, Tsung-Ying Ho, Fang Zhang, Dakai Jin.  
“Pretreatment CT Identification of Extranodal Extension in Laryngeal and Hypopharyngeal Cancers Using Deep Learning.”  
*Radiology*, 318(1):e250332, 2026. **[IF=15.2]**
18. Yujian Hu\*, Yilang Xiang\*, Yan-Jie Zhou\*, Yangyan He\*, Dehai Lang\*, Shifeng Yang\*, Xiaolong Du, Chunlan Den, Youyao Xu, Gaofeng Wang, Zhengyao Ding, Jingyong Huang, Wenjun Zhao, Xuejun Wu, Donglin Li, Qianqian Zhu, Zhenjiang Li, Chenyang Qiu, Ziheng Wu, Yunjun He, Chen Tian, Yihui Qiu, Zuodong Lin, Xiaolong Zhang, Lin Hu, Yuan He, Zhenpeng Yuan, Xiaoxiang Zhou, Rong Fan, Ruihan Chen, Wenchao Guo, Jing Xu, Jianpeng Zhang, Tony C. W. Mok, **Zi Li**, Mannudeep K. Kalra, Le Lu, Wenbo Xiao, Xiaoqiang Li, Yun Bian, Chengwei Shao, Guofu Wang, Wei Lu, Zhengxing Huang, Minfeng Xu, Hongkun Zhang.  
“AI-based Diagnosis of Acute Aortic Syndrome from Noncontrast CT.”  
*Nature Medicine*, 31:3832–3844, 2025. **[IF=50.0]**

## Skills

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**Programming** Python, JAVA, C++, PyTorch, TensorFlow  
**Languages** English Proficient | Japanese N2 | Chinese Mother-Tongue | Cantonese